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THE WHISKERED BAT, *VESPERTILIO MYSTACINUS*.

BY THE EDITOR.

PLATE II.

ALTHOUGH this small Bat has a wide geographical range in Europe, extending from Russia to Ireland, and from Finland to the Alps, it remains but imperfectly known; at all events, in the British Islands, where comparatively few instances of its occurrence have been recorded.

Referring to our "Remarks on British Bats" (Zool. 1887, pp. 161—171), wherein diagnoses are given of the genera, it will be seen that the Whiskered Bat belongs to the genus *Vespertilio*. It is the *Vespertilio mystacinus* of Leisler, and derives its specific name from the fringe of fine straight hairs which clothe the upper lip. It is thus carefully described by Dr. G. E. Dobson, whose 'Catalogue of Bats in the British Museum,' and 'Monograph of the Asiatic Chiroptera' afford the latest as well as the most authoritative information upon this order of the Mammalia:—

"Muzzle narrow; skull vaulted, not much elevated above the face line; glandular prominences on the face small. Ears as long as the head; laid forwards the tips extend slightly beyond the end of the nose; internal basal lobe angular, the horizontal margin forming, with the ascending anterior margin, a right angle; lower third of inner margin of the conch faintly convex, upper third straight, tip rounded off; upper third of the outer margin deeply concave, lower half abruptly convex, with a distinct

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lobe at the base, separated by a slight emargination opposite the base of the tragus. Tragus narrowed above and subacutely pointed; inner margin straight, or faintly concave; outer margin with a distinct rounded half-horizontal lobule at the base, succeeded by a concavity, above which and slightly above the base of the inner margin the tragus reaches its greatest width, thence upwards decreasingly convex to the tip.

Wings from the base of the toes; calcaneum terminating in a small projecting tooth; last rudimentary caudal vertebra free. Fur above dark brown, with reddish brown tips; beneath dark brown, the extremities of the hair slightly ashy.

The small glandular prominences of the face are clothed with long hairs; and the upper lip has a fringe of fine straight hairs.

The fur of the body extends upon the wing membrane as far as a line drawn from the middle of the humerus to the middle of the femur, and upon the interfemoral membrane as far as the end of the third caudal vertebra; beneath the distribution of hair upon the wings is similar, but the interfemoral is covered only at the root of the tail.

The upper incisors are equal in vertical extent, their extremities strongly diverging. Both upper premolars are drawn inwards; the second very small, about half the size of the first, and about half its vertical extent; lower incisors next the canines much larger than the others.

Length, head and body, 1.5 in.; tail, 1.4 in.; head, 0.55 in.; ear, 0.55 in.; tragus, 0.3 in.; fore arm, 1.25 in.; thumb, 0.25 in.; second finger, 2.1 in.; fourth finger, 1.6 in.; tibia, 0.55 in.; foot and claws, 0.28 in." Some specimens give somewhat larger measurements than these, but the above description will ensure the identification of the species.

Although not very many instances of the capture of this Bat in England have been made known, the recorded localities for it are sufficiently far apart to suggest that it must be commoner than is generally supposed, but is either overlooked, or mistaken perhaps for the *Pipistrelle*.

In England, according to Bell (*Brit. Quad.*, 2nd ed., 1874), specimens of the Whiskered Bat have been procured in Cambridgeshire and Northamptonshire (Jenyns), in Essex at Colchester (Yarrell), in Kent at Chiselhurst, and in Warwickshire at Spornall Park and Welford (Tomes). To these localities several

others may now be added; some in the counties already named, others elsewhere. For example, in Essex the late Mr. Doubleday obtained two examples at Epping, and Dr. Laver has found it near Colchester (Trans. Essex Nat. Field Club). In Kent it has occurred at Dover, whence in January, 1853, Mr. W. Borrer received a specimen (Zool. 1874, p. 4128). The same naturalist has reported (*l. c.*) its occurrence in Sussex, at Cowfold and Lindfield, and in Dorsetshire at Wimborne in August, 1859. In Hampshire it may be looked for about Winchester, whence Macgillivray received a specimen which he supposed to be *V. emarginatus*, Geoffroy (Brit. Quad., 1838, p. 96), as pointed out by Bell (p. 70), though he described *V. mystacinus* in the same volume. Since then, namely, in 1873, Lord Lilford picked one out of the Avon below the bridge at Christchurch, as it was swimming against a moderate stream (Zool. 1887, p. 66); and quite recently Mr. Edward Hart, of Christchurch, has very kindly forwarded another specimen from that locality. Writing on the 15th April inst., he says:—"To-day, a charming bright spring day, I saw *V. mystacinus* flying about the dining-room window, catching flies and insects on and near a chestnut-tree, where I watched it for over an hour at mid-day." From the Isle of Wight Mr. Bond procured two specimens of this Bat; one taken at Sandown by the late Rev. Charles Bury; the other shot at Freshwater by himself; and Mr. Kelsall writes word that Mr. Rogers, of Freshwater, sent him one which was taken at Niton, and which is now in the Rugby school museum.

The record by the Rev. Leonard Jenyns (now Blomefield) regarding the occurrence of this Bat in Northamptonshire, has been confirmed by the more recent observation of Lord Lilford, who has noted (Zool. 1887, p. 66) the capture in 1870 of three or four examples in the belfry of Tichmarsh Church in that county. As supplementing Mr. Tomes's testimony to its occurrence in Warwickshire, we may add that, in 1851, Prof. Flower procured a live specimen at Stratford-on-Avon, from which he made a water-colour drawing, which he kindly placed at our disposal, and which is here reproduced (Plate II.). The specimen lately forwarded from Christchurch by Mr. Hart has likewise been sketched by Mr. G. E. Lodge, and will be utilised later. Replying to an enquiry from Mr. J. E. Kelsall, the Rev. Leonard Blomefield (formerly Jenyns), now resident at Bath, asserts that the

Whiskered Bat is commoner there than the *Pipistrelle*, contrary to what he found to be the case years ago in Cambridgeshire. His letter on the subject of this and other species of British Bats is so interesting that (thanks to Mr. Kelsall) we think it well to print the information which it contains. He writes (Bath, Feb. 10, 1887):—"Both larger and small Horse-shoe Bats are frequent in this neighbourhood, and we have specimens of both species in our local museum, taken together in stone-quarries near Bath. From the same quarries we have *V. Nattereri*, but it is rare. It is a fact of some interest, in respect of the distribution of our British Bats, that the *Pipistrelle*—which is so extremely abundant in Cambridgeshire, and common generally—has only occurred to me here in two or three instances, the Whiskered Bat, *mystacinus*, apparently taking its place, and often found in shops and houses. Just the reverse in the Eastern Counties—there *mystacinus* is rare, the *Pipistrelle* everywhere. When speaking of the Little Horse-shoe, I might have added that many years back I had specimens sent me from churches in Bristol. I see I have added "Wales" in my 'Manual'* to the habitats of the Lesser Horse-shoe, but I cannot, at this distance of time, remember on what authority. I fear I have not told you much that will be of much use to you—but my work in Natural History is done."

From Garner's 'Natural History of Staffordshire' (Suppl., p. 33), and Sir O. Mosley's 'History of Tutbury' (preface), we learn that the Whiskered Bat has been identified in that county, where a specimen was procured at Burton. In Worcestershire (Zool. 1857, p. 5590) and Cheshire also examples have been obtained. In the last-named county, as reported by Mr. W. D. Roebuck ('Naturalist,' 1886, p. 113), one was found asleep on the top of a stone wall at Fernlee, near Whaley Bridge, in May, 1885.

In Lincolnshire Mr. Caton Haigh has failed to find it, although well acquainted with the species from observation elsewhere (Zool. 1887, p. 144). In Yorkshire Mr. W. D. Roebuck has established its occurrence, having received specimens from three different localities in that county—namely, from Great Mytton, in Ribblesdale; from Harrogate, in August, 1881; and from Eavestone, near Ripon, in March, 1882 (Zool. 1882, p. 147). Writing to the Editor on the 18th April last, Mr. Roebuck says:—"I am sorry

* 'Manual of British Vertebrate Animals,' 1835.

that my knowledge of the Whiskered Bat is confined to its geographical range. Of the numerous specimens which I have seen all have been dead, or nearly so, and consequently I have had no experience of its habits. As to distribution, I may say that it is one of our common species in Yorkshire, and well distributed throughout the county wherever anyone has paid attention to Bats at all, either personally, or by sending me specimens. The three species, *Plecotus auritus*, *Vespertilio mystacinus*, and *Scotophilus pipistrellus* are not very far from being equally common, so far as the number of specimens I have received are concerned. I do not know whether you care to cite localities in the county; if so, I will furnish some of them. At present I can say that I have had it from Leeds, Ilkly, Great Mytton, Pateley Bridge, Masham, and Beverley."

Proceeding further north, we find evidence of its existence in Durham, whence a specimen, formerly in the collection of Mr. Raine, is now in the possession of Mr. Bond, who also has an example which belonged to Dr. Heysham, of Carlisle, where it was captured. It is labelled "found adhering to a house-side in 1832." We learn from the Rev. H. A. Macpherson, a specimen was not long since procured on the banks of the river Eden. Messrs. Meynell and Perkins, in their "Catalogue of the Mammalia of Northumberland and Durham" (Trans. Tyneside Nat. Field Club, vol. vi., 1864), include the Whiskered Bat, with the following note:—"Shotley Bridge (Darlington?), W. Backhouse. The lines on the interfemoral membrane are numerous as in *V. daubentonii*, but the parallel lines number 12. It is altogether of a much darker colour, and smaller in nearly all respects."—*W. B.* Until lately this was perhaps the northernmost point of its range in the British Islands; but Mr. Kelsall informs us that he has seen a specimen of this Bat which it was stated had been taken in Scotland. The only three species hitherto recognised in Scotland are *pipistrellus*, *auritus*, and *daubentonii*. The Noctule is said to have also occurred, but the evidence is not satisfactory (Zool. 1887. p. 260).

In Ireland the Whiskered Bat has been identified but once, namely, at Feakle, Co. Clare, by Dr. Kinahan (Proc. Nat. Hist. Soc. Dublin, 1852, and Dublin Nat. Hist. Review, vol. i. p. 248).

In some parts of North Wales it is said to be not uncommon (Zool. 1887, p. 144). Mr. G. H. Caton Haigh states that it is

probably the most abundant Bat in the district of Penrhyndendraith in Merionethshire, being found in all sorts of situations in company with the Pipistrelle, which it very much resembles in some of its habits. It differs considerably, however, in its choice of a hunting-ground, and in its flight, which is slow and steady as in *Vespertilio daubentonii*. The Whiskered Bat, he adds (*tom. cit.* p. 294), comes abroad earlier in the evening than the last-named species, and usually selects for its hunting-ground the sheltered ends of a high hedge or plantation, or even a cliff, along which it flies to and fro, seldom rising as high as the tops of the trees or rocks nearest to it. When crossing an open space it generally keeps close to the ground, and was never observed frequenting open spaces in woods, as does the Pipistrelle.

The late Mr. Tomes, who assisted in the preparation of the second edition of Bell's 'British Quadrupeds,' had paid special attention to the Bats, and had had opportunities for observing the Whiskered Bat in the neighbourhood of his own home at Welford, near Stratford-on-Avon. He remarked that it is not unusual to see this Bat abroad during the day, even in bright sunlight—a remark, by the way, which confirms the observation above quoted by Mr. Edward Hart. Another point noted by him as a distinctive character of this species is a well-defined black spot at the insertion of the humerus. This, probably, will be found to be dependent upon age, as in some specimens which we examined it was not noticeable.

Towards the conclusion of his chapter on this species, Bell, referring to its extensive geographical range over Europe, observes:—"Finally, we think that the Himalaya Mountains will have to be given as a *habitat*; for the *Vespertilio siligorensis* of Hodgson appears to differ in no important respect from *Vespertilio mystacinus*." This is so; Dr. Dobson, in his 'Monograph of the Asiatic Chiroptera' (1876), regards them as specifically identical.

Whether this species is migratory, as others are believed to be, is an interesting point on which we should be glad to have some information. See Spallanzani (French translation), 'Rapports de l'air avec les êtres organisés,' vol. ii. p. 125; Blasius, 'Naturgeschichte der Säugethiere Deutschlands,' p. 72; and Zool. 1883, p. 173.

THE ART OF TRAINING PIGEONS IN THE EAST.

The antiquity of Pigeons as domesticated animals has been well shown by Darwin, in his 'Variation of Animals and Plants under Domestication' (vol. i. pp. 204—206). They are known to have been in this condition, he says, for nearly 5000 years; and it is remarkable in how many countries, and during how long a period, many men have been passionately devoted to breeding them.

In a Bibliography of books relating to Pigeons which we noticed some little time ago ('Zoologist,' 1887, p. 319), Mr. T. B. Coombe Williams has given a list of some 140 treatises which have been published on this subject, in English (58), German (including translations, 45), French (21), Dutch (3), Latin (3), Italian (5), Spanish (1), and Arabic (1). His list does not profess to be exhaustive, and, if manuscripts were added, the bibliography might be considerably increased. One such manuscript, or rather an English translation from the Persian original, is now before us, for which we are indebted to Mr. Coombe Williams. He informs us that it was written at the request of Sir Charles Aitcheson, Lieut-Governor of the Punjab, by one Alla-odeen, of Loharoo, and purports to be a criticism of the remarks on "Pigeon-flying" (*ishqbazi*) of Shaikh Abul Fazl, the minister and friend of Akbar the Great, which are contained in his account (A.D. 1590) of the government of that great Emperor—by far the greatest work in the whole series of Mohammedan histories of India. The *Ain i Akbari*, as it is called, contains that information regarding Akbar's reign, which, though not strictly historical, is yet essential to a correct understanding of the times, and embodies those facts for which in modern times we would turn to Administrative Reports, Statistical Compilations, or Gazetteers. "It contains," says Prof. Blochmann (whose translation of it is before us), "the *Ain* (*i. e.* mode of governing) of Akbar, and is, in fact, the Administrative Report and Statistical Return of his Government as it was about 1590 A. D."

The chapter on the Emperor's Pigeons is very interesting, and as the perusal of it is necessary to a proper understanding of the hitherto unpublished commentary by Alla-odeen, which we now propose to print, it will be desirable first to extract this,

especially as in all probability Blochmann's translation of the *Ain i Akbari* (roy. 8vo, Calcutta, 1873) will not be accessible to the majority of our readers.* The two together afford a curious insight into the mode adopted in the East of rearing and training Pigeons, and especially the way in which they are taught at word of command, or whistle, to perform certain evolutions in the air, some of which are very remarkable, and quite unattempted (so far as we are aware) in this country. We have only once seen anything approaching to an exhibition of this kind in England. Many years ago, in London, we came across an itinerant owner of a dozen Pigeons, who carried them across his shoulders in a narrow oblong square cage, slung from a bundle of props, which when properly adjusted formed a support for the cage. His performance was unique of the kind. Opening the door of the cage, he put a long post-horn to his lips, when the Pigeons, issuing forth one by one, ranged themselves in close order along the horn, all facing in the same direction. A blast from the horn, and they all took wing simultaneously, dashing up the street and over the housetops, being momentarily lost to view. On a second blast from the horn, back they came, helter-skelter, pitching one after another on the horn, and after being rewarded each with a few grains of wheat, stepped quietly back into their cage, and their owner, after sending round his hat for contributions, departed to repeat the performance elsewhere. From what we then saw of, and have since read about, the aërial evolutions of Indian and Persian Pigeons at word of command, we have sometimes wondered why Pigeon-fanciers in England have not bestowed attention upon what may evidently be made a very charming pastime. It will be seen from what follows that, in this respect, the Eastern Pigeon-fanciers are far in advance of us. If some of the remarks of Abul Fazl or his commentator appear now and then a little tedious, allowance must be made for the style of Eastern composition, so different to our own, and for the fact that, as the work of the former writer is little known and that of the latter unpublished, it is thought better to print them in their entirety, rather than to make selections which might not be generally acceptable.

* Another translation of this work by Francis Gladwin, dedicated to Warren Hastings, was published in 4to, Calcutta, 1783.

From the *Ain i Akbari*,* then, we take the following:—

“‘ISHQBASI,” OR PIGEON-FLYING.

“His Majesty calls Pigeon-flying *‘ishqbazi* (love-play). This occupation affords the ordinary run of people a dull kind of amusement; but His Majesty, in His wisdom, makes it a study; he even uses the occupation as a way of reducing unsettled, worldly-minded men to obedience, and avails himself of it as a means productive of harmony and friendship. The amusement which His Majesty derives from the tumbling and flying of Pigeons reminds one of the ecstasy and transport of enthusiastic dervishes; he praises God for the wonders of creation. It is therefore from higher motives that he pays so much attention to this amusement.

The Pigeons of the present age (A. D. 1590) have reached a high state of perfection. Presents of Pigeons are sent by the Kings of Iran and Turan; but merchants also bring very excellent ones in large numbers.

When His Majesty was very young he was fond of this amusement; but afterwards, when he grew older and wiser, he discontinued Pigeon-flying altogether. But since then, on mature consideration, he has again taken it up.

A well-trained Pigeon, of bluish colour, formerly belonging to the Khan i ‘Azam Kokaltash (‘Aziz Akbar’s foster-brother), fell into His Majesty’s hands. From the care which was bestowed upon it by His Majesty, it has since become the chief of the imperial Pigeons, and is known under the name of *Mohanah*. From it descended several excellent Pigeons, as *Ashki* (the weeper), *Parizad* (the fairy), *Almas* (the diamond), and *Shah’udi* (Aloe Royal). Among their progeny, again, there are the choicest Pigeons in the whole world, which have brought the trained Pigeons of ‘Umar Shaikh Mirza (father of Babar Sultan Husain) Mirza into oblivion. Such improvement, in fact, has been made in the art of training, as to astonish the amateurs of Iran and Turan, who had to learn the art from the beginning.

In former times Pigeons of all kinds were allowed to couple; but His Majesty thinks equality in gracefulness and performance a necessary condition in coupling) and has thus bred choice

* Blochmann’s translation, vol. i. p. 298.

Pigeons. The custom is to keep a male and a female Pigeon, if not acquainted with each other, for five or six days together, when they become so familiar that even after a long separation they will again recognise each other. The hen generally lays her eggs from eight to twelve days after coupling, or more if she be small or sickly. Pigeons couple in *Mihrmah* (September—October), and separate in *Farwardin* (February—March). A hen lays two eggs, but sometimes only one. The cock will sit upon the eggs by daytime, and the hen during the night, and thus they keep them warm and soft. In winter they hatch for twenty-one days, but if the air be warm they only take seventeen or eighteen. For about six days the Pigeons feed their young with *falak*, which means grain reduced to pap in the crops of the old ones. Afterwards they feed them from the grain in their crops, which they bring up before it is fully digested. This they continue for about a month, and as soon as they see that the young ones can pick up their own grain the old ones will go away. Eggs, or even young ones, are sometimes given to other Pigeons to take care of. Home-bred young ones are trained. Some are kept in a *tor* (?) till they get stronger, and get acquainted with the place. As soon as these two things have been attained the Pigeons only get one-third or one-fourth of their daily allowance of food. When they have got a little accustomed to hunger they are gradually allowed to take flights. They take daily about forty *hawas* (air)—*i. e.* forty flights. At this period the trainers pay no regard to what is called *charkh* and *bazi* (*vide* below). Of feathers they count ten, and if eight of them have fallen out the keepers no longer allow the Pigeons to fly, but keep them at rest (*khabanidan*). After two months the Pigeons get new feathers, and become very strong; they are then again let off. This is the best time for showing their skill. As soon as the Pigeons learn to perform the *bazi* and the *charkh* they are sent to His Majesty for inspection, and are kept for four months in readiness to exhibit their skill.

Charkh is a lusty movement, ending with the Pigeon throwing itself over in a full circle. If this circular turn be not completely carried out the movement is called *katif* (shoulder), and is held in no esteem. *Bazi* is the same as *mu'allaq zadan* (lying on the back with the feet upwards and quickly moving round (in Hind. *kala*)). Some thought that the two wings (*katif*) meet, which appears to the observer as if it were a *mu'allaq*; but His Majesty

had one wing of a Pigeon blackened, when the erroneousness of that opinion became evident.

Some Pigeons get confused during the *bazi* and *charkh*, and come stupified to the ground. This is called *gululah*, and is disliked. Sometimes Pigeons hurt themselves and fall down; but often they get all right again when they come near the ground, and, taking courage and collecting their strength, they fly up again. A Pigeon of the *khaçah* pigeon-cots will perform fifteen *charkhs* and seventy *bazis*—a feat which will certainly astonish the spectators. In former times they let eleven or twenty-one Pigeons fly at a time, but now-a-days they let off as many as a hundred and one. From the attention which His Majesty has bestowed upon Pigeons, they are now so carefully trained as to be let fly at night, even to great heights.

At the time of the departure and the breaking-up of the camp, the Pigeons will follow, the cots being carried by bearers (*kuhar*). Sometimes they will alight and take rest for awhile, and then rise again.

It would be difficult to count the Pigeons at Court, but there are more than twenty thousand. Five hundred of them are *khaçah*; they have a great reputation, and remarkable stories are told of their skill.

Pigeon-trainers of former times, in order to determine the value of a Pigeon, used to twist the foot or looked to the slit of the eyes, or the openings on the top of the bill; but they failed to discover more signs of the value of the breed. His Majesty has discovered many more; and fixing the value of a Pigeon—in former times a matter of great difficulty—has now become very easy. *First*.—His Majesty subdivided the three signs of former trainers as follows: the two eyes and their upper and lower signs; the eight claws; the two sides of the beak, above and below. The mutual comparison of these signs has lead to many additional means of fixing the value of a Pigeon. *Secondly*.—His Majesty looks to the variety and the colour of the annular protuberances on the feet of Pigeons. A book has been made in which the systematic order of these signs has been laid down. According to them His Majesty distinguishes ten classes, for each of which separate aviaries have been constructed. The price of Pigeons in the first house has not been limited. Many a poor man, anxious to make his way, has found in the training of superior Pigeons

a means of getting rich. A pair of second class Pigeons has a value of 3r.; third class, $2\frac{1}{2}$ r.; fourth class, 2r.; fifth class, $1\frac{1}{2}$ r.; sixth class, 1r.; seventh class, $\frac{3}{4}$ r.; eighth class, $\frac{1}{2}$ r.; ninth and tenth classes, $\frac{3}{8}$ r.

When inspections are held, the stock of *Mohanah* first pass in review; then the young ones of *Ashki*. Though the latter belong to the former they are now separately counted. Then come the four *zirih* Pigeons: they are the stock of a Pigeon which belonged to Haji 'Ali, of Samarqand, which coupled with an 'Udi hen, of which I do not know the owner; their stock has become famous. The precedence of all other Pigeons is determined by their age or the time they were bought.

THE COLOURS OF KHAÇAH PIGEONS.

Magasi, fly-bitten; *zirih*, steel-blue; *amiri* (?); *zamiri*, a colour between *zirih* and *amiri* (His Majesty invented this name); *chini*, porcelain-blue; *nafti*, grey, like naphtha; *shafaqi*, violet; 'udi, aloe-wood coloured; *surmai*, dark grey, like powder of antimony; *kishmishi*, dark brown, like currants; *halwai*, light brown, like *halwa* sweetmeat; *çandali*, light brown, like sandalwood; *jigari*, brown; *nabati*, greyish white; *dughi*, bluish white, like sour milk; *wushki*, of the same colour as the gum called *wushk*; *jilani* (*chilani* ?); *kurai*, brown, like a new earthen pot (?); *nilufari*, bluish white; *azraq*, a colour between yellow and brown (His Majesty applies this name in this sense); *atashi*, black-brown; *shaftalu*, peach-coloured; *gul-i-gaz*-coloured (?) yellow; *kaghizi*, yellowish, like native paper; *zagh*, grey, like a crow; *agri*, a colour between white and brown; *muharraqi*, a dirty black; *khizri*, a colour between greenish and 'udi; *abi*, water-coloured; *surmag*, a name invented by His Majesty to express a colour between *surmai* and *magasi*.

Pigeons of these colours have often different names, as *gulsar*, whose head resembles a flower; *dumghazah*, stumptail; *yakrang*, of one colour; *halqumsafid*, white throat; *parsafid*, white wing; *kallah*, big head; *ghazghazh*, wild chick; *magh*, name of an aquatic bird; *babari* (?); *alpar*, red wing (?); *kaltah par*, short wing; *mahdum*, moontail; *tauqdar*, ring-bearer; *marwaridsar*, pearl-head; *mash 'alahdum*, torch-tail; &c.

Some trainers of the present age give Pigeons such names as indicate their colours. His Majesty rather calls them according

to their qualities, as *baghah qarapilk* (with black eyelids), *abyari*, *palangnigari*, *rekhtah pilk*. There are also many Pigeons which do not perform *charkhs* and *bazis*, but are distinguished by their colours or by peculiar tricks. Thus (1) the *Kokah* Pigeon, the voice of which sounds like the call to prayer; (2), the *Baghah*, which utters a peculiar voice in the morning to wake up people; (3), the *Lugqan*, which struts about proudly, wagging its head, neck, and tail; (4), the *Lotan*: they turn it about, and let it off on the ground, when it will go through all motions which a half-killed fowl goes through. Some Pigeons will do so when the keeper strikes his hand against the ground, and others will show the same restlessness when on leaving the cage their beak is made to touch the ground; (5), the *K'herni*. The cock shows a remarkable attachment to the hen: though he fly up so high as to be no longer visible, if the hen be exposed in a cage, he will get restless and drop himself instantly down to join her. This is very remarkable. Some of them come down with both wings spread, others close one; some close both, or they change alternately the wing which they close in flying; (6), the *Rat'h* Pigeon is chiefly used for carrying letters, though any other kind may be trained to bring letters even from great distances; (7), the *Nishawari* Pigeon will fly up, and follow its cage to whatever place it be taken. It will fly out of sight, and stay away for a day or two, when it comes down and remains in its cage; (8), the *Parpa* (having feet covered with feathers) will inhale air (?), and act as if it sighed.

Some Pigeons are merely kept for the beauty of their plumage, the colours of which receive peculiar names. Thus they are called *shirazi*, *shustari*, *kashani*, *jogiyah*, *rezahdahan*, *magasi*, and *qumri*. Wild Pigeons are called *golah*. If some of them are caught they will be joined by a thousand others; they soon get domesticated. They return daily to the fields, and get on their return salt-water to drink; this makes them vomit the grain which they had eaten in the fields. The grain is collected, and given as food to other Pigeons.

People say that Pigeons will but rarely live above thirty years.

Four *sers* of grain will be sufficient for one hundred of such Pigeons as are made to fly; but for other Pigeons five *sers* are required, or seven and a half if they pair. But flying Pigeons

get millet, not mixed with other grain; the others get a mixture of seven kinds of grain — viz. rice, *dal a nukhud* (grain), *mung dal*, millet, *karar*, *lahdarah*, *juwar*. Though most servants of His Majesty keep Pigeons and show much skill in training them, there are a few that have risen to eminence, as Qul 'Ali of Bukhara, Masti of Sarmaqand, Mullazadah, Puri Mulla Ahmad Chand, Muqbil Khan Chelah, Khwajah Candal Chelah, Mumin of Harat, 'Abdullatif of Bukhara, Haji Qasim of Balkh, Habib of Shahr-sabz, Sikandar Chelah, Maltu, Maqud of Sarmaqand, Khwajah P'hul, Chelah Hiranand.

The servants attached to the Pigeon-houses draw their pay on the list of the army. The pay of a foot-soldier varies from two rupees to forty-eight rupees a month."

Here ends Abul Fazl's chapter in the *Ain i Akbari*. In our next number we will give the commentary by Alla-ooddeen, in which that writer points out, amongst other things, the particular respects in which the Indian method of training Pigeons differs from the Persian.

ADDITIONS TO THE LIST OF SOMERSETSHIRE BIRDS.

By CECIL SMITH.

In the review of the Rev. A. C. Smith's 'Birds of Wiltshire' (p. 119) the reviewer compares the total number of species in that county with the total number in the adjoining county of Somerset, making the total number of Wiltshire birds "235 or about 20 more than the adjoining county of Somerset, washed by the waters of the Severn and the Bristol Channel." As this agrees very closely with the numbers in my 'Birds of Somerset,' 216 and one (*Surnia funerea*) in an Appendix, altogether 217, I suppose the reviewer has taken the numbers from my book. He should remember, however, that this was published in 1869, nearly 20 years ago, whilst the 'Birds of Wiltshire' is written up to date. Of course since then a good many species have been added to the Somerset list, and as most of these have been recorded in 'The Zoologist,' the reviewer might have ascertained and stated the additions. That the whole northern boundary of Somersetshire is washed by the Bristol Channel is perfectly true, but unless we use the old archæological name of the "Severn

Sea," which in former times was applied to the Bristol Channel as far down as Lundy Island, I should hardly consider the estuary of the Severn itself as extending beyond the junction of the Bristol Avon, which river forms the boundary of the county as far up as Bristol. But whether we call it the Bristol Channel, or use the older but perhaps more suitable title of the Severn Sea, though its shores and waters have added vast numbers of birds, these like "our enforced sins, stand more for number than account," many of the species occurring in such numbers on our coasts making their appearance as passing migrants and stragglers in Wilts and other inland counties. The reviewer, after comparing the numbers of the Wiltshire and Somersetshire birds adds, "this also testifies very plainly to the powers of observation exercised by the men of Wiltshire;" perhaps it also testifies equally plainly to the greater caution exercised by the men of Somerset in admitting "escapes" and doubtful species. I have not, I am sorry to say, been able yet to read Mr. A. C. Smith's 'Birds of Wilts,' though I hope to do so soon. I have no doubt, however, he has exercised due caution in this matter.

As the records of the new birds added to the Somersetshire list since 1869 are somewhat scattered through the pages of 'The Zoologist,' and a few appear not to have been recorded, I think it may be useful if I collect the records, and add a list giving the date of the record of the first occurrence where more than one. I take them in the order in which I find the records:—

Rose-coloured Pastor, *Pastor roseus*, Zool. 1869, p. 1866.—from 'The Field.'

White's Thrush, *Turdus varius*, C. S., Zool. 1870, p. 2018.

Wood Sandpiper, *Totanus glareola*, C. S., Zool. 1871, p. 2441.

Great Bustard, *Otis tarda*, Harting, Zool. 1871, p. 2477.

Iceland Gull, *Larus leucopterus*, C. S., Zool. 1871, p. 2488.

Red-necked Grebe, *Podiceps griseigena*, C. S., Zool. 1871, p. 2563.

Sanderling, *Calidris arenaria*, C. S., Zool. 1873, p. 3627.*

Honey Buzzard, *Pernis apivorus*, C. S., Zool. 1874, p. 3869.

* I shot one in May, 1872, the first I ever saw on our coast. Mr. Gurney showed me one he had shot at Minehead seven years ago, but it is by no means a common bird with us.

Marsh Warbler, *Acrocephalus palustris*, C. S., Zool. 1875, p. 4713; Mathew, Zool. 1877, p. 333; and 1880, pp. 265, 306.*

Black-throated Diver, *Colymbus arcticus*, C. S., Zool. 1876, p. 4804.

Little Owl, *Athene noctua*, Braikenridge, Zool. 1879, p. 32.

Pomatorhine Skua, *Stercorarius pomatorhinus*, C. S., Zool. 1880, p. 19.

Manx Shearwater, *Puffinus anglorum*, C. S., Zool. 1882, p. 433.

Red Grouse, *Lagopus scoticus*, C. S., Zool. 1885, pp. 66, 147.

Little Stint, *Tringa minuta*. Saw one stuffed at Weston-super-Mare, stated, I have no doubt correctly, to have been killed there. Not hitherto recorded.

Tengmalm's Owl, *Nyctala Tengmalmi*. One in Mr. Edwards' collection, shot near Winscombe. Not hitherto recorded.

Parrot Crossbill *Loxia pityopsittacus*. Shot at Clevedon; in Mr. Braikenridge's collection. Not hitherto recorded.

Red-legged Partridge, *Caccabis rufa*. Shot at Kingston, near Taunton, December, 1882; in my own collection. I think Mr. Edwards has also recorded it in 'The Field,' from the Mendips.

White Wagtail, *Motacilla alba*. I have found it common both here and in other parts of the county, though I had not recognised it at the time of publishing the 'Birds of Somerset.'

Possibly to these may be added the Lesser White-fronted Goose, *Anser erythropus* (making the number up to 20 since the 'Birds of Somerset' was published), recorded by Mr. Gynnell, of Wellington, Somerset, in 'Science Gossip' for March last. I have seen the head, wings and legs—all that is left of this bird—and have no doubt as to the identity; but I have great doubt as to whether it ought to be added to the Somerset list on the authority of that specimen, one of the wings showing great signs of its having escaped from confinement. I have sent a note on that subject to 'Science Gossip.'

If the Canada Goose, *Bernicla canadensis*, is to be considered British, it must of course be added to the Somerset list, several specimens having occurred at various times. But I have always considered these to be escaped specimens, or their descendants.

* See also Seebohm, "Field Notes on the Reed and Marsh Warblers," Zool. 1880, p. 377.

OUR COMMON DRAGONFLIES.*

BY W. E. BAILY.

MANY and varied as are the animated objects peopling our streams, ponds, and marshy lands, few place themselves so conspicuously before us as the Dragonflies. Most of us in our summer walks have frequently paused to admire the mazy evolutions of these surpassingly graceful creatures, as they dart, turn, and skim over the surface of some stagnant pool in search of food; or soar far up in the clear air engaged in combats sportive or vindictive. And so distinct a group of insects do they form, that even the usually unobservant rustic knows them by quaint and fanciful names, such as "horse-stang," presumably a corruption of "stinger;" and "devil's darning-needles," a title doubtless conjured up from the slender body, coupled with great powers of flight and most truculent aspect. It is indeed true that, as regards his domestic habits, the Dragonfly must meet with a rather heavy verdict at our hands; for, unlike the butterfly or the "busy bee," he is truly a savage, ferocious fellow—the terror of every peaceful insect that is unfortunate enough to inhabit the locality to which his clear-winged majesty is partial.

But to credit him with a sting is to invest him with a power he does not possess; for although his strong horny jaws will bite viciously if he be captured—and their endeavours are often accompanied by an ominously suggestive curl of the long slender abdomen—no trace of any aculeate organs can be found. The comparison between the Dragonfly and the Eagle is sufficiently striking: the rapacious carnivorous habits, the strong untiring flight, and the great power of vision, being the most prominent characteristics of their respective families.

These insects—although in no way injurious to man—play an important part in the economy of the world; for being absolutely carnivorous, they render great service in thinning out the superabundant insect life, and thus helping to keep within bounds a host of creatures which are themselves obnoxious.

In its larval state the Dragonfly is totally aquatic—living in some stagnant pool or slow-running stream, and drawing, doubt-

* From the 'Proceedings of the Penzance Natural History Society,' 1887, pp. 67—69.

less, largely on its weaker brethren for bodily sustenance. Whilst in this state the mouth of the creature is an object well worthy of study, the entire front of the face being covered by a kind of mask, situate at the extremity of a long-jointed arm, and furnished with two enlarged hooks or jaws. With this curious apparatus the insect seizes its prey, throwing off its mask—not figuratively, but actually—and clutching the object with the hooks, which then convey the dainty morsel to its mouth.

The larval form has also a very curious apparatus, which reminds us of that possessed by the cuttlefishes, and which enables the insect to violently eject a stream of water by means of this contrivance, and so to spring or dart along with considerable speed. In common with other insects, the Dragonfly after a certain period assumes the state of pupa or chrysalis; but instead of becoming an inert mass enclosed in a cocoon after the manner of the *Lepidoptera*, this form only differs from the larval state in being larger, and in having the wings a little more developed. But without doubt, whilst in this state, processes are quietly at work altering and transforming the insect so as to fit it for its last great change; and when this is accomplished, the pupa crawls up a friendly reed or other aquatic plant until it emerges from the water. Soon a rent or tear appears in its back, and, lo! there emerges from this horny, unengaging-looking shell the perfect Dragonfly, who, after resting awhile to dry and harden his delicate wings, darts swiftly and gracefully away, leaving us to ponder once again over the inscrutable mysteries Nature is always exhibiting to us.

In spite of their beauty and frequent occurrence the Dragonflies do not appear to have engrossed so much of the attention of naturalists as has been accorded to other sections of entomology, and works on the subject are neither numerous nor extensive, whilst some are not readily accessible.

The most complete monograph of *Libellulidæ* with which I am acquainted is M. Charpentier's '*Libellulidæ Europæ*,' a work written in Latin, and profusely illustrated by excellent coloured plates of every European species then known. A smaller French work, without plates, was published in 1840 by M. E. de Selys Longchamps, and is very valuable on account of the minute specific descriptions and the copious critical notes which are appended.

In 1857 Dr. Hagen published in the 'Entomologist's Annual' for that year a brief monograph of the British species, and also appended descriptions of others which he was of opinion might be found here. And in the early numbers of 'Science Gossip' for 1881 Mr. E. B. Kemp-Welch has re-described our British Dragonflies.

From these works it may be learnt that 46 species have been recorded for Great Britain, and out of these 10 are represented by single examples (or at most by *two* specimens). Besides these, one species (*L. dubia*) is reported to be very rare; so that it seems probable we have about 35 species which are fairly represented.

Now one great requisite of the Libellulæ is water, not necessarily large rivers, but shallow ponds and streams, and these are not very plentiful in West Cornwall as compared with other English counties; besides which must be taken into account the physical conformation of this area, and its situation, almost, so to speak, in mid-ocean.

Therefore we can scarcely hope to find a large number of these insects; and of those which do occur, we should naturally expect a preponderance of the more feeble and sluggish species, rather than of the larger and more powerfully-winged species. And this is exactly what we find to be the case.

[While on the subject of Dragonflies, we may appropriately quote some curious observations made by Mr. W. H. Hudson on the Dragonflies inhabiting the South-American Pampas and Patagonia, which appeared in 'The Field' of October 9th, 1886.—Ed.]

"ONE of the most curious things I have encountered in my observations on animal life relates to a habit of the larger species of Dragonflies inhabiting the Pampas and Patagonia. Dragonflies are abundant throughout the country wherever there is water. There are several species, all more or less brilliantly coloured. The kinds that excited my wonder, from their habits, are twice as large as the common widely-distributed insects, being three to four inches in length, and, as a rule, they are sober-coloured, although there is one species—the largest among them—entirely of a brilliant scarlet. This kind is, however, exceedingly rare.

All the different kinds (of the large Dragonflies) when travelling associate together, and occasionally, in a flight composed of countless thousands, one of these brilliant-hued individuals will catch the eye, appearing as conspicuous among the others as a poppy or scarlet geranium growing alone in an otherwise flowerless field. But the really wonderful thing about them all alike is, that they appear only when flying before the south-west wind, called *pampero*—the wind that blows from the interior of the Pampas. The *pampero* is a dry, cold wind, exceedingly violent. It bursts on the plains very suddenly, and usually lasts only a short time, sometimes not more than ten minutes; it comes irregularly, and at all seasons of the year, but is most frequent in the hot season, and after exceptionally sultry weather. It is in summer and autumn that the large Dragonflies appear; not *with* the wind, but—and this is the most curious part of the matter—in advance of it; and inasmuch as these insects are not seen in the country at other times, and frequently appear in seasons of prolonged drought, when all the marshes and water-courses for many hundreds of miles are dry, they must, of course, traverse immense distances, flying before the wind at a speed of seventy or eighty miles an hour. On some occasions they appear almost simultaneously with the wind, going by like a flash, and instantly disappearing from sight. You have scarcely time to see them before the wind strikes you. As a rule, however, they make their appearance from five to fifteen minutes before the wind strikes; and when they are in great numbers the air, to a height of ten or twelve feet above the surface of the ground, is all at once seen to be full of them, rushing past with extraordinary velocity in a north-easterly direction. In very oppressive weather, and when the swiftly advancing *pampero* brings no moving mountains of mingled cloud and dust, and is consequently not expected, the sudden apparition of the Dragonfly is a most welcome one, for then an immediate burst of cold wind is confidently looked for.

It is clear that these great and frequent Dragonfly movements are not explicable on any current hypothesis regarding the annual migration of birds, the occasional migrations of butterflies, or the migrations of some mammals, like the Reindeer and Buffalo of Arctic America, which, according to Rae and other observers, perform long journeys north and south at regular seasons, “from a sense of polarity.” Neither this hypothetical sense in animals,

nor "historical memory"—as the present phase of Dr. Erasmus Darwin's old tradition theory is called—will account for the Dragonfly storms, as the phenomena of the Pampas might be called, since the insects do not pass and repass between "breeding and subsistence areas," but all journey in a north-easterly direction; and of the countless millions flying like thistle-down before the great *pampero* wind, perhaps, not one solitary traveller ever returns.

The cause of the flight is probably dynamical, affecting the insects with a sudden panic, and compelling them to rush away before the approaching tempest. The mystery is that they should fly from the wind before it reaches them, and yet travel in the same direction with it. When they pass over the level treeless country, not one insect lags behind, or permits the wind to overtake it; but on arriving at a wood or large plantation, they swarm into it, as if seeking shelter from some swift-pursuing enemy, and on such occasions they sometimes remain clinging to the trees while the wind spends itself. This is particularly the case when the wind blows up at a late hour of the day; then, on the following morning, the Dragonflies are seen clustering to the foliage in such numbers that many trees are covered with them, a large tree often appearing as if hung with curtains of some brown glistening material, too thick to show the green leaves beneath.

In Patagonia, where the phenomenon of Dragonfly storm is also known, an Englishman residing at the Rio Negro related to me the following occurrence, which he witnessed there:—A race meeting was being held near the town of El Carmen, on a high exposed piece of ground, when, shortly before sunset, a violent *pampero* wind came up, laden with dense dust-clouds. A few moments before the storm broke, the air all at once became obscured with a prodigious cloud of Dragonflies. About a hundred men, most of them on horseback, were congregated on the course at the time, and the insects, instead of rushing by in their usual way, settled on the people in such quantities that men and horses were quickly covered with clinging masses of them. My informant said, and this agrees with my own observation, that he was greatly impressed by the appearance of terror shown by the insects; they clung to him as if for dear life, so that he had the greatest difficulty in ridding himself of them.

Weissenborn, in Loudon's 'Magazine of Natural History'

(N. S. vol. iii.) described a great migration of Dragonflies which he witnessed in Germany in 1839, and also mentions a similar phenomenon occurring in 1816, and extending over a large portion of Europe. But in these cases the movement took place at the end of May, and the insects travelled due south; their migrations were therefore similar to those of birds and butterflies, and were probably due to the same cause. I have been unable to find any mention of a phenomenon resembling the one with which we are so familiar on the Pampas, and which, strangely enough, has not been recorded by any European naturalists who have travelled there."

NOTES AND QUERIES.

MAMMALIA.

The Elk in Galicia.—At Christmas last an Elk, *Alces machlis*, was shot in Galicia. It is now one hundred and thirty years since the last of these animals was killed in Austria. It is believed that the one referred to had come from Lithuania.—'Nature,' Jan. 26, 1888.

A new Beaver Colony in Saxony.—Since the middle of March about thirty Beavers have been found at Gegenwehrsberg, above Ranies, not far from Schonebeck on the Elbe, in the province of Saxony, where, for want of dwellings, they have sought shelter in the bushes covering the Elbe dam. They are now beginning to burrow under the dam, which is consequently liable to be injured, and it seems doubtful there whether they can be allowed to remain there permanently.

Fox and Hare in unwonted proximity.—I take the opportunity of relating a circumstance of apparent friendship and fraternization on the part of two animals whose habits are as different from each other as possibly can be—the one a Carnivore, the other an Herbivore. A short time ago, just before the last frost, when the South Dorset Hounds were crossing a neighbouring stubble-field between a covert they had just drawn and another, when a Fox and a Hare jumped up out of a bare open pit, only a few yards in diameter, and shallow enough to allow it to be cultivated. The bareness of the pit makes it impossible to suppose that its two occupants were unaware of each other's proximity.—J. C. MANSEL-PLYDELL (Whatcombe).

[It is not unlikely that the Fox was engaged in stalking the Hare, or lying in ambush for it when disturbed.—ED.]

Otters and Polecats in Suffolk.—According to reports published from time to time in the local papers, great destruction seems to have been wrought of late among the Otters in Suffolk. No less than eight have been killed during the past winter in the Stour alone—several about Beccles, one was destroyed last January near Blaxhall, and the death of another at Walberswick was reported only a few days back; while in all probability other instances have occurred which have not found their way into the newspapers. The slow-running muddy Suffolk rivers seem to have some special attraction for Otters, possibly from the great abundance of eels; and of late years these animals have, for some reason, been more frequently met with than was the case some twenty or thirty years back. This is hardly what circumstances would lead one to expect, as many of their old strongholds are gone. The venerable pollard-ash trees, hollow with age, which supplied our forefathers with firewood, are year by year disappearing. Ancient alders, too, under whose big spreading boles were admirable retreats for Otters, are gradually dying out without successors, the few trees planted singly for many years back by the river-side, and about the low meadows, being in most places either poplars or willows. Otters would no doubt be fairly common in Suffolk if protected; but, instead of this, they are, as a rule, shot or trapped, if possible, wherever they make their appearance. In the 'Ipswich Journal' of March 28th of the present year, a Polecat is reported to have been caught at Mildenhall, in a trap set for an Otter. The account given of its capture is as follows:—“On Saturday night Mr. David Jude (caretaker of the Town Hall) set a trap to catch an Otter which had been making depredations among the fishes in the vicinity of Warmil Staunch, and on Monday morning he discovered a Polecat in the trap, an animal rarely seen in this neighbourhood. The animal is evidently a young one, and it has been handed over to Mr. C. A. Jessup, an amateur taxidermist of this town, to be stuffed.” The Polecat is now a much rarer animal in Suffolk than the Otter, though it existed in some of the larger woods not very many years back, and within the memory of persons still living. About twenty-three years ago my brother obtained from a keeper the skin of a freshly-killed Polecat. This specimen was also from Mildenhall, and I do not think the capture of one of these animals in that neighbourhood was at the time thought to be anything very remarkable. As far as I am aware, the Polecat has been completely exterminated throughout the eastern part of the county, and in the west it is probably very nearly extinct.—G. T. ROPE (Blaxhall, Suffolk).

Seasonal Change of Colour in the Stoat.—I have no doubt that the change in colour from brown to white and *vice versa*, during the autumn and spring, is effected much the same as is the plumage of many birds “minus moulting”; but such change does not take place with all, as the finest Stoat I have ever caught was in the full brown of the summer,

although trapped in mid-winter. I have also met with it mostly white so late as Easter. Having shot, trapped, and examined a great many, I think the whitest fur will be met with during December and January; those I have caught later have assumed a portion of brown over the head, neck, and near the tail; the tip of the tail is black in all seasons. I consider the Stoat to be the boldest and most destructive member of our native Mammalia—a real little glutton when it enters a well-stocked game-preserve.—J. SUTTON (33, Western Hill, Durham).

Variety of the Mole.—I have just found a newly-killed and rather curious variety of the Mole. A line of reddish brown runs down the under surface of the body; and the fur below the forelegs, under the chin, and at the root of the nose above is of the same colour.—E. P. LARKEN (Gatton Tower, Reigate).

Bank Vole in Shropshire.—Mr. T. C. Eyton contributed a "Fauna of Shropshire and North Wales" to the 'Magazine of Zoology and Botany,' which afterwards became the 'Annals and Magazine of Natural History.' At page 397 of vol. iv. of the latter publication he says that the Bank Vole was several times taken near Eyton.—J. E. KELSALL.

BIRDS.

Magpies attacking a weakly Donkey.—Lieut.-Col. G. M. Morgan, of Biddlesden Park, Brackley, in a letter dated March 8th, sends me the following story, which I trust you will consider as worthy of insertion in 'The Zoologist':—"My son, from whom I heard this morning, relates a very curious circumstance; he lives at a place called Doddershall Park, in Bucks, about three miles and a half in a straight line from Wotton House, the seat of the Duke of Buckingham, where the woods are very extensive and not strictly preserved, so that Magpies are tolerably numerous. Jonah George, alluded to by my son, acts as chief woodman and gamekeeper on the Doddershall property, and is well known to me as a most respectable and reliable man. I give the occurrence in my son's own words:—"Jonah George tells me that he had noticed in the snow fourteen or fifteen Magpies hovering about his old Donkey, which was turned out in his field with a sore back. He came to me for some cartridges one morning, and told me that the Magpies had killed the Donkey and eaten a great piece out of his back. There was nothing else the matter with the Donkey, and the wound made by the birds was quite sufficient to kill it. He shot two Magpies in the act of eating the Donkey.'" I received another letter from Colonel Morgan this morning (March 19th), in which he tells me that he is informed by his son that the sore was on the spine of the Donkey, and there can be no doubt that the Magpies got at the spinal marrow; he adds that the wound on the dead beast's back was seven or eight inches across.

I have long been well aware that Magpies are in the habit of frequenting the backs of cattle in search of the grubs known as "bots," and thus acquire a taste for beef, occasionally making hideous sores; but the above is the first well-authenticated instance that has come to my knowledge of the actual murder by these birds of any mammal larger than a weakly Rabbit.—LILFORD (Bournemouth).

Grey Shrike in Cumberland.—The example of *Lanius excubitor* recorded from Cumberland (p. 147) by my neighbour Mr. Tandy, is the second obtained in the county during the winter 1887-8. The first was killed near Carlisle on Nov. 29th, and is a mature bird, having two wing-bars and pure white under parts. I recently took the trouble to extract all the records of this bird from 'The Zoologist,' 1843—1887, and an analysis of the results throws some light on the migration of the species to and from the British Isles.—H. A. MACPHERSON (20, Cecil Street, Carlisle).

The Nutcracker in Kent.—The accompanying cutting from 'The Standard' of Jan. 28th, 1886, speaks for itself:—"In one of your admirable articles in 'The Standard' of to-day you refer to a great band of Nutcrackers, *Nucifraga caryocatactes*, which invaded Western and Central Europe forty-two years ago. It may interest you to learn that I obtained a fine specimen of this bird on the 17th of November last (1885) in Strode Park, Herne, the seat of Mr. Prescott-Westcar, and that on examination it was found that, although the bird is called a Nutcracker, and presumably is a nut-eater, its stomach contained more specimens of small Coleoptera than vegetable or other matter.—COLONEL WILLMOTT (Eddington Cottage, Canterbury, Jan. 26, 1886).' I do not know whether the occurrence of this specimen of the Nutcracker was recorded in any Natural-History journal at the time; if not, it might be as well to record it now in 'The Zoologist.'—DIGBY S. W. NICHOLL (The Ham, Cowbridge, Glamorgan).

Albino Sky Lark and Starling.—I am informed by Mr. J. Cording, bird-preserved, of Cardiff, that he has recently received, for preservation, a cream-coloured Sky Lark, and also a white Starling, both of which were obtained in the neighbourhood. — DIGBY S. W. NICHOLL (The Ham, Cowbridge, Glamorgan).

Probable Occurrence of the Chough in Suffolk.—In a migration schedule received this morning (April 14th) from Mr. Owen Boyle, of the Landguard Lighthouse, is the following entry:—"April 2nd, 1888. Two crows put in an appearance, 7.30 a.m., larger than jackdaws; they had red beaks and legs, and went north-west."—JOHN CORDEAUX (Great Cotes, Ulceby).

Wildfowl at Ringwood, Hants.—Although the past winter has been somewhat severe, yet the weather has been comparatively open, and

continuous hard frost has been the exception rather than the rule; this, coupled with the extreme lowness of the water in the river, has made the season anything but a prolific one to the local gunners. In the early part of the season three "Wild Swans," and, still more recently, two "Wild Geese," were reported in the local press to have been killed. On inspection they proved to be Mute Swans and Canada Geese, escaped, no doubt, from some ornamental water. Wild Duck, Wigeon, and Teal were, perhaps, as common as usual, with an occasional Pochard, immature Goldeneye, or a stray Pintail; but such species as the Goosander, Tufted Duck, Sheldrake, and Gadwall were entirely absent; and I heard of but one specimen—a female—of the Shoveller having been met with: not that any of the last-named species are ever very common, but hitherto scarcely a winter has passed without my having seen one or more of the species—especially the Goosander—at some age or another, mostly immature, and occasionally a specimen in splendidly adult plumage. As to the Pochard, I am informed on reliable authority that upon a portion of the river where the wildfowl are preserved it was no uncommon occurrence, some twelve or fourteen years ago, to kill eighteen or twenty of these birds in a day's shooting, where now it is seldom met with, some winters not a specimen being seen. It would be interesting to know if such is the case in other places formerly frequented by it. On the 3rd of January a fine specimen of the Common Bittern was killed; I saw it before it was dead, and was struck with the power it had of spreading out the long feathers of its breast and neck, almost like a fan. Two days later (*viz.* on the 5th January), three others were killed within a half-hour of each other; I had not heard of one before or since those dates. Since the shooting ceased on the 1st of March two or three Geese, supposed to be of the White-fronted species, were seen on several parts of the river, and, notwithstanding the inclement weather previously, there is not much doubt but that some Wild Ducks were laying before the shooting was over.—G. B. CORBIN (Ringwood, Hants).

Herring Gull hatching a Fowl's Egg, and feeding on Mice.—The following circumstance occurred recently at the west-end of this county:—A Herring Gull had been allowed to run about the garden of its owner for upwards of twelve years, and was supposed to be a male bird until last spring, when it laid an egg, which, being infertile, was taken away and replaced by a hen's egg, upon which the Gull continued to sit, and in due time hatched one chick, on which she bestowed the most tender parental attention. This is the more extraordinary, as she was in the habit of resenting the approach of every fowl, old or young, and on several occasions had killed and eaten chickens that had ventured too near; this practice she still retains. Shortly before her roosting-time she habitually became excited, and, as far as her clipped wing permitted, flew around and

about the chick, which alarmed it, and, to prevent any misadventure, it was brought into the house at night and returned to its foster-parent the following morning, when the two might be seen walking about side by side in the closest bond of affection. As late as January 1st, when the foster-chick was nearly full-grown, their devotedness the one for the other was as intense as at first. Another incident in connection with a Herring Gull, which was in a feral state, and not in quasi-captivity, as in the above instance, occurred only last week, which is worth recording. My keeper, who is an observant naturalist, noticed a Herring Gull unusually near his house, and busily engaged at the remains of a rick, which had been opened the previous day, and many mice (*Mus sylvaticus*) killed and thrown among the surrounding straw. Being at a loss to know what the Gull was feeding upon, he shot it, and found a mouse half down its throat, head first, and three in its stomach, evidently just swallowed. These two instances show how omnivorous the Herring Gull is, and that it is immaterial whether its prey is dead or alive.—J. C. MANSEL-PLEYDELL (Whatcombe, Blandford).

Food of the Hawfinch.—A favourite summer food of the Hawfinch is green peas; the quantity they will consume is rather astonishing. In the autumn I found in their stomachs the kernels of a small stone-fruit, which, as the birds had been frequenting bullace trees, and the odour of prussic acid was very strong, I have no doubt they obtained from that fruit. A very favourite food seems to be the fruit of the yew, and I have also found what I have not the slightest doubt were the kernels of the whitethorn. Both the kernels of the bullace and whitethorn were divested of their hard shells.—T. SOUTHWELL (Norwich).

Food of the Hawfinch.—As regards Hawfinches feeding on kernels of cherry and plum stones (referred to on page 117), I may note that some years ago I had a pair of Hawfinches sent up from Norwich in the flesh. Upon skinning them, the odour of prussic acid was very marked, and they were found to be crammed with the undigested kernels of plum or damson stones. This was late in autumn, and it should be borne in mind that the stones had doubtless been exposed for weeks to the action of the weather, and were, in consequence, more readily opened than they would have been when fresh from the fruit.—A. B. FARN (Stone).

Garganey in Co. Carlow.—In the 'Dublin Evening Telegraph' of March 30th a notice appeared to the effect that a specimen of the "Blue-winged Teal" had been obtained in the County Carlow, and that it was on view at the shop of Mr. Kant, naturalist. On the following day I visited the premises, and was shown the bird. It proved to be a male Garganey, *Querquedula circia*. As a specimen of the true Blue-winged Teal has never, so far as I am aware, been obtained in Ireland, and as hereafter the notice in question may be referred to as evidence of the bird's occurrence, I think

it right to place the real fact on record. A second specimen of the Garganey, a male in fine plumage, was obtained recently in the county of Dublin, and has come into the hands of Mr. Williams, naturalist, Dame Street.—J. J. DOWLING (1, Fingal Terrace, Clontarf).

The Kite in Glamorganshire.—Having read Mr. E. C. Phillips' interesting note on the Kite in Breconshire (p. 145), I have referred to some notes of mine respecting the occurrence of the Kite in Glamorganshire, including an interesting communication on the subject which I received some time since from Lord Aberdare, which I send, thinking that perhaps it may interest some of the readers of 'The Zoologist.' His lordship writes:—"One fact may be worth recording, as showing the changes which take place in one man's lifetime. When I was a youth 'Salmon-tailed Kites' were as common in this valley of Aberdare as Buzzards. I remember one day counting no less than twenty-five of both sorts sailing above the Duffryn Graig (a large wood adjoining his house). I once took the nest of a 'Salmon-tailed Kite,' and found in it a drowned puppy, the hind quarters of a small pig, a rat, and a rabbit. Earlier still, about 1800, my father and uncle (the late Dean of Llandaff) borrowed the longest ladder in the parish for the purpose of scaling a grove of oaks at Penrheioceiber (now an important colliery village), with the object of getting the eggs of Herons and Kites, which lived there amicably together. The ladder did not reach the lowest branch of the lowest oak-tree, so they failed in their attempt. Besides a heronry and Kite's nest, there was a rookery in the same grove, which had disappeared before my time, the owner having cut it down, tempted by the high prices given during 'the war' for oak timber for ship-building purposes—seven shillings a foot being a common price." Lord Aberdare goes on to say that he has not seen a Kite in his neighbourhood for the last forty years, nor a Buzzard for about ten years. He adds:—"Rare birds and occasional visitors were always more frequently seen in the Vale of Glamorgan than among its mountains." The following more recent occurrences of the Kite in Glamorgan have come to my knowledge:—One that was shot by the late Mr. Llewelyn at Penllergare, near Swansea; another killed in the Ystead Rhondda Valley in 1873; and a third obtained at Tirphil, in November, 1882. I heartily endorse Mr. Phillips' hope that the birds he saw may remain unmolested and allowed to breed, and also your wish that people would assist as much as possible in checking the practice of making rare birds still rarer by shooting them whenever an opportunity occurs.—DIGBY S. W. NICHOLL (The Ham, Cowbridge, Glamorganshire).

Gulls on the Thames at Kingston.—During the third week of March there were several Gulls flying and feeding over the river here. I made out with the glasses the Common Gull (*Larus canus*), the Black-headed

Gull (*L. ridibundus*), and also one large bird, probably the Herring Gull (*L. argentatus*). This is the first time I have seen these birds so far up the river; no doubt they were driven up by the severe weather.—F. V. THEOBALD (The Chestnut Grove, Kingston).

Crossbills, Bramblings, and Black Redstart in the South of Ireland.—I see it noted in 'The Zoologist' (p. 144) that Crossbills have been numerous in Breconshire during the past winter. These "gipsy migrants" have also penetrated here. On the 26th December last my servants saw, close to this house, five birds "like Bullfinches, but larger," whose bills they described to be like Hawks' bills, and the plumage of some of them to be red. On February 20th Mr. R. E. Longfield, of Mallow, wrote to tell me of several instances in which Crossbills had been shot near Mallow and Doneraile, Co. Cork, during January and February. During these latter months three Bramblings were obtained near this, and others seen. They were the first Bramblings I ever saw in the flesh, the species being uncommon in the Co. Waterford. On the 28th March last a Black Redstart was disporting itself opposite the window while I was at breakfast. On March 28th, 1880, Dr. Burkitt obtained an immature Redstart at Waterford, probably of this species. This is the latest date in which I have met with this scarce winter visitant. It usually occurs in the early part of the winter, and probably visits us every year. It can no longer be called rare here. Since writing the above I received, on April 6th, a Crossbill, in fine brick-red plumage, shot near Cappoquin while in company with another. On showing it to my servants they all identified it as the species they saw here on December 26th.—R. J. USSHER (Cappagh, Co. Waterford).

Girl Bunting in Breconshire.—I saw one of these birds, for the first time in this county, on March 15th. Going out for a walk I noticed a bird just outside my garden fly from a hedge into a tree, where it stayed until one of my boys killed it with a catapult. It was a cock bird, in good plumage. Two practical ornithologists, to whom I have shown the bird, say they have never seen this species here before. This bird was alone, and I expect was but an accidental straggler; still I am pleased to have been able to identify it, for it is a new addition to my list of Breconshire birds. I need scarcely add I am having it preserved.—E. CAMBRIDGE PHILLIPS (The Elms, Brecon).

Number of Eggs laid by the Cuckoo.—It is supposed that the Cuckoo lays more than one egg in different nests, and probably more than two, at intervals in the season; Bewick says from four to six; Blumenbach also says six. The following observation came to the knowledge of a friend of mine, and may tend to throw some light on the subject. He knew a case in which a man killed two of these birds at one shot, and

brought them to a bird-preserver, still warm, to be set up, saying how he had killed them, which was the reason why he wished them stuffed. The birds were left, and during the day, when they were skinned, it was found that in one of them was a perfect egg, ready for exclusion, and a number of others in various stages of development, from which it is clear that the hen lays five or more eggs. The perfect egg was broken before its presence was suspected. The other bird was more carefully treated, but was found to be a male. My friend made preparations of both birds, put them in spirits, and placed them in the Cardiff Museum. — DIGBY S. W. NICHOLL (The Ham, Cowbridge, Glamorgan).

A Morning at the Flight-nets.—A friend and I had long meditated a visit to some flight-nets set in the Duddon estuary near Hodbarrow, Cumberland. On Jan. 10th, before daybreak, we took the early morning train for Millom, and, as soon as the tide was sufficiently low, set off along the coast for the nets. Our walk was rendered pleasant by the bird-life to be seen and heard upon the gloomy salt-marshes. Many hundreds of wild duck of various species could be observed, by far the most numerous this year being *Anas boschas*, the "grey duck," as it is locally called; we also noticed several flights of Shelduck. The marshes resounded on all sides with the tuneful note of the Redshank, and the somewhat mournful cry of the Curlew. Darting about at the edge of the water were many "sea-pies" (*Hamatopus*). Unfortunately before we reached the nets a sea-mist came on and hid for a time from view the number of birds swimming on the estuary. In the mist a large bird flew past us, and some doubt existed as to what it was; the owner of the nets declared that it was "what we call a gull, but the proper name is 'cockleyar.'" At length we reached the nets. These were constructed of fine linen twine, a six-inch mesh being employed, and were set loosely on stakes some seven or eight feet high, so that when a bird strikes against them, in its struggles it quickly becomes entangled: the finer the twine the greater is the chance of success. The nets extend for from 80 to 100 yards. On this occasion not a single bird was caught, and the snarer complained that he had never had so poor a season. Although a man of no general intelligence, our guide, like many of his class, was a keen observer of nature. On our return journey he pointed out the small round holes made by the Wild Ducks in the sand when it was covered by an inch or two of water; these marks he called "duck-hunts"; he readily distinguished them from the holes made by the "flukes" or plaice when seeking food, although an uneducated eye could perceive little or no difference. The nets are only set when there is no moon: our guide referred to that period of the month as "the dark." In previous seasons fair success had attended the labours of the netter, to whom all and every kind of bird seem welcome, except, perhaps, the small birds, called by them "sea-mice" (*T. alpina*). Curlews locally fetch 2s., which

is above the London price; Shelduck from 4s. to 5s.; "sea-pies," 4d. each. A Cormorant caught in the nets in 1885 ('Birds of Cumberland,' p. 81) was sold for 8s., and even at that price the netters regretted its capture, as it played sad havoc with their hands. The approved mode of cooking "sea-pies" appears to be first to skin them, then boil them for ten minutes, and finally stuff and roast them. Curlews treated the same way are said to equal Duck. The behaviour of the various kinds of birds after they have been caught is very different: Ducks die with scarcely a struggle, but Curlews, Gulls, and Oystercatchers are game to the last, and are frequently unpleasant customers to handle. We visited the nets again the following week, at 6 a.m., and most weird were the cries of the different birds on the dark marshes; the nets were a second time without wildfowl. — T. N. POSTLETHWAITE (Hallthwaites, Millom, Cumberland).

Notes from Western Australia.—My last notes were written, if I remember correctly, from the Gascoyne in August, and chiefly concerned a trip to the Mivalya River. Since then I have made an exceedingly interesting trip overland to Perth, following the coast-line as a rule, at a distance of about twelve miles inland. Leaving the Gascoyne early in September, we passed through flat country covered with one almost dense thicket, at times opening on salt bush-flats, when we were enabled to see a little distance away, this bush not growing more than two or three feet in height. We followed the telegraph line to avail ourselves of the cut road, the thicket on each side being, as a rule, quite impenetrable. Bird life was uninteresting. We picked up many small species killed by striking against the wire, principally the Grasshopper Birds which abounded. An Emu or two was seen when we could get a glimpse of the country further away. Water was very difficult to procure; in fact we only found two pools of mud before reaching the Wooramel River, and had we been a week later should not even have had this. This river is about eighty miles from the Gascoyne, and, like it, is almost invariably a dry sandy bed, but much smaller. There was the usual fringe of white gum-trees along the river-banks, in which were numerous flocks of the Western Long-billed Cockatoo. We now struck across dreary salt-marshes, absolutely bare of everything, vegetable or animal, to the sea-coast, which we followed for a few miles, when we found the thicket running down to the salt water, and abounding in the famous Ngows, or Brush Turkeys, but to my great disappointment it was too early for eggs. I noted the White-tailed Sea Eagle, and with my binoculars could see large flocks of snow-white Egrets feeding along the edge of the sea. There appear to be no fish in this part of the sea; shut in by islands to the west, and the water being shallow, it seems to be too salt even for fish, owing to the intense evaporation. Calling in at Flint Cliff Telegraph Station for stores I noted, in cages, the Bronze-wing Pigeon and Blood-stained Cockatoo or "Joggle-Joggle,"

obtained there. The coast here was rocky and rugged, caves and fissures running up the low cliff and forming homes for the wild dogs. Seven miles after leaving this lonely habitation, the aspect of the country is changed. All at once we entered a belt of dense mallee scrub, and a variety of other shrubs and bushes totally different to those growing in the surrounding country. This belt is about fifty miles broad, and I am told runs out on Dirk Hartog Island. Old nests of the Ngow were encountered every few yards, but we only saw one bird. Their tracks were very numerous. Natives had just come down in anticipation of securing eggs. It appears these birds are much less numerous than formerly, and it is difficult to account for them dying out, as the country is absolutely unsettled. The domestic cat, which is found quite wild and of large size all through the colony, is blamed by some as the destroying agent. There is a small colony of Ngows close to the coast a few miles north of the Gascoyne River. As far as this belt of mallee extends, the country is a succession of steep hills covered with deep loose sand. Water is only obtained from tanks on the telegraph line roofed with galvanized iron, which delivers the rain and dew into the tank below. The dews are exceedingly heavy, and the supply of water is kept up much more by this means than by rain. However, this road is very rarely taken by anyone, excepting the man looking after the line. We emerged from this dense thicket about twenty miles north of the Murchison River, crossing open sand-plains where were numerous Brush Turkeys and Bustards. I was much interested in the movements of a hen bird; while endeavouring to draw us away from her nest, she walked round with her great wings widely spread, uttering a curious croak. One egg appears to be the usual number, and there is really no nest at all. I only secured one egg on the trip, which is exactly like that of the European Bustard. After crossing this plain we came suddenly on the valley of the Murchison River. Deep rocky gorges on either side and a curious conical hill rising from the centre of the valley, with a perpendicular rocky summit rather difficult to scale. The Murchison is the farthest northern river that runs permanently, and it was indeed a treat to see clear running water after such a long experience of the dry sandy rivers farther north. The river is only a few feet in width at places, but opens out into deep lake-like pools abounding with aquatic bird-life. Here we found quantities of ducks; among them the curious Musk Duck, which is a difficult bird to shoot; It dives even quicker to the flash than does the Long-tailed Duck of the northern seas. I omitted to mention finding a nest of a Kingfisher in the mallee thicket. It was excavated in the side of one of the numerous white ants' mounds, and contained five eggs about the size of those of the Belted Kingfisher. I could not see the bird. It reminded me of the Kingfishers' nests in far-off Yorkshire, yet how different the

surroundings! There were numbers of Black Swans breeding on the Murchison, but being much hunted by natives were very difficult to approach. The young were hiding about the rushes; it was apparently too late for eggs (Oct. 4th). Coots and Waterhens were numerous, and there were colonies of the White-faced Heron, all of whose nests contained large young birds. The river abounds in Mullet, and there were plenty of White-bellied Eagles. I climbed to three nests, two of which contained two eggs much incubated. The nests were, as a rule, placed high in the summit of a lofty gum-tree. In the underpart of one of the Eagles' nests was a smaller nest with eggs, built in the larger structure. It appeared to belong to a sort of Java Sparrow (so called here). There was a species of Diver on the river, but I failed to secure specimens. The old oak-tree grows here, and I fancy the black snake finds its northern limit here. I have never seen or heard of a specimen of this species in the dry northern districts. It is a true swamp lover. Rock Wallabies were plentiful on the cliffs, and took a lively interest in our camp. The Blood-stained and Long-billed Cockatoos were numerous, and also the Collared Twenty-eight Parroquet. All the nests I examined contained young of the latter. Young Cockatoos were all on the wing. We first noted here the White-tailed Black Cockatoo. Very large flocks of this bird were feeding on the Banksia seeds. It is a striking-looking bird, and utters a not unmelodious cry. Magpies and "Squeakers" also occurred, and were not met with further north. Immediately the Murchison River was crossed numbers of the Great Red Kangaroo were seen. The river seems to be a natural boundary, only a few individuals crossing to the north side occasionally. The famous black bay-trees are also here met with directly the river is crossed. A long stretch of sandy plain extends to the town of Northampton (about eighty miles), affording no food for stock, and in places covered with poison plant. Though of no use to the settler, these sand-plains are covered with a variety of shrubs and plants bearing most beautiful and interesting flowers. From Northampton to Champion Bay the country is somewhat rugged, this being the mineral district of Western Australia. From Champion Bay we proceeded by way of the Back Flats. About twenty miles north of the Irwin River we found Kangaroos, both red and brown, simply in flocks. They are not much hunted in this district, for it seems the farther north the Kangaroo is found, the thinner its skin, and hence less valuable. Bitterns occurred in all swamps. After crossing the Irwin River the country again changes, swamps are plentiful, Lake Loge being a fine sheet of water. The formation of the country surrounding Lake Loge is limestone, and there are a number of exceedingly large and extensive caves with stalactite. They have never been explored by anyone, and are great strongholds for dingoes. The mouth of one cave we saw we

roughly calculated to be fully fifty feet high and one hundred feet wide; the interior for a considerable distance was even larger, and branched out into numerous other passages. At Henry River, Brush Kangaroos were seen. The timber increases as Perth is approached, and more than one hundred miles distant it is simply one forest, and birds are very little seen. There were quantities of wild bees in the hollow limbs, which frequently afforded us a welcome supply of delicious honey. From Fremantle I proceeded to Vasse by a coasting-schooner, and was surprised to find such a paucity of sea birds. There were none; possibly they might be breeding on some of the islands. I have just returned from a trip to the famous Karri country, in the south-western corner of this colony. So much has been written of these magnificent trees that it is unnecessary to describe them. The country from here is one dense mass of timber, the voice of birds is seldom heard, and shooting specimens on the summits of these giant trees is out of the question—they are far beyond the reach of a gun. Where a house is, however, and especially if surrounded by a fruit-garden, Parrots, Cockatoos, Squeakers, and many fruit-loving species of birds abound. Having left my "Gould" in the north, I noted many birds respecting which it is useless to write, unfortunately, for I only know them as yet by the local or native names. Possibly, however, the above rough notes may give some idea of the fauna on the "overland road" in Western Australia.—THOMAS CARTER (Vasse, Western Australia).

SCIENTIFIC SOCIETIES.

LINNEAN SOCIETY OF LONDON.

April 5, 1888.—W. CARRUTHERS, F.R.S., President, in the chair.

The following were admitted Fellows of the Society:—Messrs. D. Sharpe, J. B. Farmer, and J. A. Voelcker. Mr. G. B. Sowerby was balloted for and elected a Fellow.

Amongst the exhibitions of the evening, Mr. D. Morris (Kew) showed a curious native bracelet from Martinique. Although formed apparently of seeds, or beads of wood, or bone, its real composition had puzzled both botanists and zoologists, and until microscopically examined could not be determined.

Mr. J. G. Baker exhibited a series of specimens of *Adiantum Fergusoni* and *Capillus veneris*, and offered some remarks upon their specific and varietal characters.

Mr. J. E. Harting exhibited a specimen of a rare British animal, the Pine Marten, which had been trapped in Cumberland, and made some

observations on the present distribution of the species in the British Islands.

Mr. Clement Reid exhibited a series of fruits and seeds obtained by Mr. J. Bennie from interglacial deposits near Edinburgh, affording evidence of a colder climate formerly than that now prevailing in the lowlands of Scotland.

Mr. F. Crisp exhibited some fragmentary remains of a wild goose shot in Somersetshire, which had been reported as the Lesser White-fronted Goose, *Anser erythropus*, Linn., but which was apparently an immature specimen of *Anser albifrons*, Scopoli.

In the absence of the author, a paper by Mr. A. W. Waters, "On some Ovicells of the Cyclotomatous Bryozoa," was read by the Zoological Secretary, Mr. W. Percy Sladen, and after an interesting discussion the meeting adjourned to April 19th.

ZOOLOGICAL SOCIETY OF LONDON.

March 20, 1888.—HENRY SEEBOHM, Esq., F.Z.S., in the chair.

Mr. G. A. Boulanger read a note on the classification of the *Ranidae*, in which, after speaking of the difficulty hitherto experienced in dividing this large group satisfactorily, he called attention to Peters's discovery that in certain forms a small additional phalanx is present between the ultimate and what is normally the penultimate phalanx. The author therefore proposed to separate the family *Ranidae* into two groups, according to the presence or absence of this peculiar digital structure.

Mr. G. B. Sowerby gave the description of sixteen new species of Shells, amongst which were two species of the genus *Lima* from Hongkong and Japan: a remarkable species of the rare genus *Malletia* from the Bay of Bengal; a very distinct species of *Cypræa* from Japan; and one of the largest species yet known of the genus *Columbella*.

Mr. F. E. Beddard read some notes on a freshwater Annelid, of which he had obtained specimens from a tank in the Society's Gardens. He referred these specimens to a new species of the genus *Æolosoma*, which he proposed to call *Æ. headleyi*.

Prof. Newton communicated (on behalf of Mr. Scott Barchard Wilson) the description of *Chloridops*, a new generic form of *Fringillidæ*, based on a specimen obtained on the west coast of the island of Hawaii, Sandwich Group, which he proposed to name *Chloridops koua*. Unfortunately the single example yet obtained was of the female sex.—P. L. SCLATER, Secretary.

ENTOMOLOGICAL SOCIETY OF LONDON.

April 4, 1888.—Dr. DAVID SHARP, F.L.S., President, in the chair.

The Rev. J. H. Hodson, B.A., of Torquay, Devon; Mr. A. J. Croker, of New Cross, S.E.; Mr. G. C. Griffith, of Cotham, Bristol; and Mr. Albert H. Jones, of Eltham, Kent, were elected Fellows.

Mr. H. Goss exhibited a large number of insects lately received from Baron Ferdinand von Mueller, K.C.M.G., F.R.S., of Melbourne, which had been collected by Mr. Sayer on Mount Obree and the adjoining ranges in New Guinea, during Mr. Cuthbertson's recent expedition there under the direction of the Royal Geographical Society of Australia. The collection comprised about 240 species of Coleoptera, 150 species of Lepidoptera, 48 species of Hemiptera, and a few species of Diptera, Hymenoptera, and Orthoptera. The Lepidoptera included twenty species of butterflies belonging to the genera *Calliplæa*, *Chanapa*, *Hamadryas*, *Melanitis*, *Mycalesis*, *Hypocysta*, *Tenaris*, *Hypolimnias*, *Cyrestis*, *Neptis*, *Acræa*, *Dan*, *Pithicops*, *Appias*, *Ornithoptera*, and *Eurycus*.

Mr. Osbert Salvin, F.R.S., exhibited, and made remarks on, about sixty specimens—no two of which were alike—of a species of butterfly belonging to the genus *Hypolimnias*, all of which had been caught by Mr. Woodford near Suva, Viti-Levu, Fiji, on one patch of *Zinnias*.

Mr. H. T. Stainton, F.R.S., exhibited, on behalf of Mr. G. C. Bignell, cases of *Thyridopteryx ephemeriformis*, Haworth, collected near Charleston, U.S.A. Mr. Stainton said he hoped Mr. Bignell would not introduce this pest into England.

Mr. W. F. Kirby exhibited, and read notes on, about twenty species of South African dragonflies lately received from Mr. Roland Trimen, F.R.S., of Cape Town. Mr. Kirby said the collection included some new species.

Mr. A. Sich exhibited a bred specimen of a variety of *Plusia gamma*.

Mr. Goss read a letter from Mr. Bignell, correcting a statement made by Mr. Poulton at the March meeting of the Society, to the effect that the variety *Valezina* of the female of *Argynnis paphia* did not occur in Devonshire. Mr. Bignell said that the var. *Valezina* was included in Mr. Reading's 'Catalogue of Devonshire Lepidoptera'; and further that he had himself taken specimens of this variety in Bickleigh Vale, Devon.

Mr. Waterhouse read a paper entitled "Additional Observations on the Tea-bugs (*Helopeltis*) of Java," and exhibited a number of specimens of these insects. He said that the species infesting the *Cinchona* in Java was supposed to have been introduced from Ceylon in tea, but that he had discovered that the species on the Tea and on *Cinchona* in Java were distinct, and that both species were distinct from *Helopeltis Antonii* of Ceylon.

Herr Jacoby read a paper entitled "New, or little-known, species of Phytophagous Coleoptera from Africa and Madagascar."

A letter was read from Mr. E. C. Cotes, of the Indian Museum, Calcutta, asking for the assistance of British Entomologists in working out certain groups of Coleoptera, Neuroptera, Orthoptera, Diptera, and Hymenoptera in the Indian Museum. A discussion ensued, in which Mr. M'Lachlan, F.R.S., Dr. Sharp, Mr. Waterhouse, Herr Jacoby, and Mr. Distant took part.—H. Goss, *Hon. Secretary*.

NOTICES OF NEW BOOKS.

The Geographical Distribution of the family Charadriidæ; or the Plovers, Sandpipers, Snipes, and their Allies. By HENRY SEEBOHM. 4to, pp. i—xxix, 1—524, with 21 Coloured Plates and numerous woodcuts. London: Sotheran & Co. 1887.

THE subject matter of this important work falls into two divisions, for while the larger share of Mr. Seebohm's energy has been devoted to elucidating the numerous and difficult questions that have from time to time arisen regarding the separation of allied forms, together with their respective geographical ranges, the earlier chapters explain his personal theories. These, while undoubtedly of importance, require, we think, to be received with some amount of caution.

The classification of *Aves* absorbs the first chapter, wherein the author, basing his conclusions on the researches of Sundevall and Huxley, boldly reduces the twenty-six orders proposed by Selater to no more than five. These five orders are designated (1) *Anseriformes*, embracing Owls, Eagles, Herons, Flamingoes, Ducks, Cormorants, and their allies (1000 species); (2) *Cuculiformes*, viz. Goatsuckers, Cuckoos, Woodpeckers, Parrots, Kingfishers, Hornbills, Rollers, Toucans, Jacamars, Pigeons, and their allies (1900 species); (3) *Passeriformes*, Passerine birds, Hummingbirds, Swifts, and their allies (5980 species); (4) *Charadriiformes*, Penguins, Divers, Grebes, Auks, Gulls, Petrels, Plovers, Snipes, Cranes, Rails, Pheasants, Tinamus, and their allies (1100 species); (5) *Struthioformes*, Ostriches, Cassowaries, Apteryx, and their allies (20); the total number of known species being roughly estimated at 10,000 species.

The order *Charadriiformes* is held to include the *Crypturi* (40 species), *Gallinæ* (310), *Grallæ* (150), *Limicolæ* (280), *Gaviæ* (200), *Procellariidæ* (100), *Impennes* (20). The suborder *Limicolæ* comprises eight families; viz. *Pteroclidæ*, *Turnicidæ*, *Thinocoridæ*, *Dromadidæ*, *Charadriidæ*, *Otidæ*, *Parridæ*, and *Chionidæ*, the number of *Charadriidæ* being 192 species.

Although the writer's views on classification may not be generally acceptable, it is only fair to remark that his exposition of them affords evidence of a due consideration of those of Parker, Garrod, Forbes, and Newton, references to whose papers are furnished in the text.

The second chapter explains Mr. Seebohm's theory (already broached in 'The Ibis' for 1887),—that the *Charadriidæ* originated on the shores of the Arctic Ocean, exemplifying the laws of Evolution, with special reference to teleological variation. Mr. Romanes' theory of "Physiological Isolation," which is discussed and rejected as untenable in the third chapter, paves the way for Mr. Seebohm's conjectures as to the part played by glacial epochs in the subsequent dispersal of types. As regards the successive "ice ages," Mr. Seebohm admits that their dates are at most a matter of mere "guess-work." In any case his views rest on the calculations of Dr. Croll, which, though received on all hands with respect and deference, have not by any means become generally accepted. Mr. Seebohm's suggestion, that the Polar species were driven south by ice, is at least plausible on its own merits; but we fail to understand his assurance that the primitive type of the *Charadriidæ* acquired migratory habits prior to the earliest of the supposed glacial epochs, *i. e.* without any hypothesis suggesting the necessity or advantage of such migration. In Chapter V. the author dwells upon the extent to which the *Charadriidæ* perform long journeys, pointing out that their *double* annual moult is due to the necessity of repairing feathers which have become abraded by long use and exposure.

Mr. Seebohm's experiences of migration at Heligoland are already well known, nor is any new information on this point added in the present chapter, excepting a neat table of observations on certain *Limicolæ* made by Herr Gätke in 1885, showing that the migration of these birds continues even during the depth of winter.

In Chapter VII. Mr. Seebohm states his opinion that the

Limicolæ do not conform to the zoological regions of Sclater, but must be placed in three zones, governed by the isotherms. Thus we should have first an *Arctic Region*, the prehistoric home of the race, whither more than a quarter of the known species still migrate to breed during the month of July, when the mean temperature would vary from 60° in the lower latitudes to 40° in the higher ones. Secondly, a *Tropical Region* would supply a temperature of from 90° to 77° during the breeding season. The species included in this region are residents. The *Temperate Zone* would supply a third breeding temperature, varying from 77° to 60° . The respective areas of the regions here suggested are well shown on a map, which affords one of many instances in which the author has been careful to anticipate the requirements of the most exacting reader.

Coming to the body of the work, we find that the *Charadriidæ* comprise the subfamilies *Charadriinæ*, *Totaniinæ*, *Scolopacinæ*. Half-a-dozen genera of *Charadriinæ* are next diagnosed by a "Key"; the first of these, *Ædicnemus*, has the tarsus reticulated, with the central tail-feathers exceeding all others by more than an inch. With something bordering on inconsistency, considering the views previously advanced, Mr. Seebohm proceeds to explain the distribution of the species in the Palæarctic, Oriental, Ethiopian, and Neotropical Regions, adding a Key to the species, which deals with their external characters; and here we may remark that a most important feature of the book appears in the pains taken to facilitate the identification of species.

We note with some surprise that the large form of the Ringed Plover breeding in Great Britain is raised by Mr. Seebohm to the questionable position of an insular subspecies, while it is laid down as almost certain that the Eastern and American Golden Plovers are "conspecific," though the American bird is slightly the larger form, varying in length of wing from 6.8 to 7.5, as compared with 6.0 to 6.7. The innermost secondaries of the Nearctic bird are supposed to be relatively shorter than those of *C. fulvus*; "what appear to be intermediate forms, however, occur on the Pacific coast of Asia." Mr. Seebohm points out that the American Golden Plover is identical in both habits and changes of plumage with its Asiatic ally," from which, as he finally concludes, it can only be separated with great difficulty.

We regret to see a repetition of the myth first promulgated

in his work on 'British Birds,' to the effect that the Dunlin breeds on the mountains of the Lake district—a statement which has been already contradicted on good authority.

Among the species included in the European avifauna, but hitherto unrecorded from any British locality, are the Terek Sandpiper (considered by our author, in spite of its recurved bill, to be an arctic form of the Common Sandpiper); the Mediterranean Curlew (*tenuirostris*), distinguishable by its short tarsus, striated crown, and pure white axillaries, and breeding as far north as 50° in Russia; and the Marsh Sandpiper (*stagnatilis*), appropriately named by Jerdon the Little Greenshank, which has been obtained at Heligoland.

The rarer species described include the Asiatic Erman's Sandpiper (of which only half-a-dozen specimens are extant), and the still rarer Magellanic Plover, *Charadrius sociabilis*. This last was discovered in the Straits of Magellan nearly fifty years ago, but the type preserved in the Paris Museum, with another obtained for the British Museum at the same time, remained unique until 1886, when Mr. John Young fell in with a flock of five or six, and secured one of them, on a rocky point in Tova harbour, on the coast of Patagonia, in lat. 45° South.

Another curious species is the Wry-billed Plover of New Zealand, of which Mr. Harting gave so full an account in 'The Ibis' for 1869. This bird is remarkable for the fact that the bill invariably curves considerably to the right—a peculiarity which we are assured is quite perceptible even in the downy young.

Apropos of New Zealand, another fact of interest chronicled from that colony is that many of the museums in New Zealand possess apparent hybrids between the Black Oystercatcher (*unicolor*) and the Pied (*longirostris*), which intermediate forms are supposed to be unfertile.

The beautifully coloured plates (twenty-one in number) by Keulemans, and the numerous woodcuts which adorn the volume, add materially to its utility and value.

